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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,160	06/04/2001	Todd Schoepflin	OT2.P72	5887

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EXAMINER	
TABATABAI, ABOLFAZL	
ART UNIT	**PAPER NUMBER**
2625	3

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,160	SCHOEPFLIN ET AL.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 8-12* is/are rejected.

7)☐ Claim(s) *6,7,13 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 June 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-5 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kreitman et al (U S 5,491,517) in view of Gardos et al (U S 5,710,602).

Regarding claim 1, Kreitman discloses a method for tracking an object among a plurality of image frames, comprising the steps of:

defining a background mask for each one frame among a plurality of image frames (column 2, lines 33-39 and column 8, lines 21-34), including a current image frame (column 2, lines 10-17), the background mask of a given image frame comprising

background pixels (column 8, lines 21-34 and column 12, lines 40-45), the background pixels of the given image frame being observable for the given image frame (column 5, lines 43-50);

maintaining a background model of background pixels, which have been observable in at least three consecutive image frames (see abstract and column 2, lines 1-24);

defining a foreground mask for the current image frame as being pixels not in the background mask for said current image frame (column 2, lines 33-39); and,

identifying the object as being the pixels within the foreground mask for the current image frame (fig. 5 element 60 and column 8, lines 21-34).

However, Kreitman is silent about the specific details regarding the step of:

classifying each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame;

In the same field " tracking " of endeavor, however, Gardos discloses gain correction for encoding video images comprising the step of:

classifying each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame (column 7, lines 6-22).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use classifying each pixel of a current image frame as taught by

Gardos in the system of Kreitman because Gardos provides Kreitman a system which accurate foreground/background segmentation can be thwarted when the video images are generated by a video camera that performs automation gain control. Automation gain control causes interframe differences to occur in regions that are spatially static. This can result undesirable increases in the bit rate. It can also lead to misidentification of background regions as being part of the foreground.

Regarding claim 2, while Kreitman is silent about the specific details regarding the step of performing a mask filtering operation on the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame.

In the same field " tracking " of endeavor, however, Gardos discloses gain correction for encoding video images comprising the step of performing a mask filtering operation on the background mask of the current image frame to decide whether to change a pixel classification from being a background pixel in the background mask to being a foreground pixel in the foreground mask of the current image frame (column 8, lines 32-56).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use mask filtering as taught by Gardos in the system of Kreitman because Gardos provides Kreitman a system which accurate foreground/background segmentation can be thwarted when the video images are generated by a video camera that performs automation gain control. Automation gain control causes interframe

differences to occur in regions that are spatially static. This can result undesirable increases in the bit rate. It can also lead to misidentification of background regions as being part of the foreground.

Regarding claim 3, while Kreitman is silent about the specific details regarding the step of performing a mask filtering operation on the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame.

In the same field " tracking " of endeavor, however, Gardos discloses gain correction for encoding video images comprising the step of performing a mask filtering operation on the foreground mask of the current image frame to decide whether to change a pixel classification from being a foreground pixel in the foreground mask to being a background pixel in the background mask of the current image frame (column 8, lines 65-67 and column 9, lines 1-17).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use mask filtering as taught by Gardos in the system of Kreitman because Gardos provides Kreitman a system which accurate foreground/background segmentation can be thwarted when the video images are generated by a video camera that performs automation gain control. Automation gain control causes interframe differences to occur in regions that are spatially static. This can result undesirable increases in the bit rate. It can also lead to misidentification of background regions as being part of the foreground.

Regarding claim 4, Kreitman discloses the method further comprising, for each one pixel of a current image frame, the step of predicting a background value for said one pixel based upon a predicted background value of said one pixel from the prior image frame, a pixel value of said one pixel from the current image frame (column 8, lines 28-34), and a mixing factor (fig. 5 element 66 and column 7, lines 30-41).

Regarding claim 5, while Kreitman is silent about the specific details regarding the step of classifying said each one pixel of the current image frame is based in part on the predicated background value for said each one pixel.

In the same field " tracking " of endeavor, however, Gardos discloses gain correction for encoding video images comprising the step of classifying said each one pixel of the current image frame is based in part on the predicated background value for said each one pixel (column 9, lines 12-17).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use predicated background value as taught by Gardos in the system of Kreitman because Gardos provides Kreitman a system which accurate foreground/background segmentation can be thwarted when the video images are generated by a video camera that performs automation gain control. Automation gain control causes interframe differences to occur in regions that are spatially static. This can result undesirable increases in the bit rate. It can also lead to misidentification of background regions as being part of the foreground.

Regarding claim 8, Kreitman discloses an apparatus for tracking an object among a plurality of image frames, the apparatus receiving an initial estimate of the object for an initial image frame, the apparatus comprising:

a background model of values for a plurality of background pixels which have been observable in at least three consecutive image frames (column 2, lines 10-24);

a foreground mask for the current image frame formed as being pixels not in the background mask for said current image frame, wherein the object being tracked is identified as corresponding to the pixels within the foreground mask of the current image frame (column 2, lines 33-39).

However, Kreitman is silent about the specific details regarding the step of:

Processor classifying each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame;

In the same field " tracking " of endeavor, however, Gardos discloses gain correction for encoding video images comprising the step of:

Processor (fig. 3 element 302) which classifies each one pixel of the current image frame as being a background pixel or a foreground pixel based on the background model, the current image frame, and at least one of a prior image frame and a subsequent image frame, the processor identifying a background mask for the current image frame (column 7, lines 6-22).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use classifying each pixel of a current image frame as taught by

Gardos in the system of Kreitman because Gardos provides Kreitman a system which accurate foreground/background segmentation can be thwarted when the video images are generated by a video camera that performs automation gain control. Automation gain control causes interframe differences to occur in regions that are spatially static.

Claim 9, is similarly analyzed as claim 2 above.

Claim 10, is similarly analyzed as claim 3 above.

Claim 11, is similarly analyzed as claim 4 above.

Claim 12 is similarly analyzed as claim 5 above.

Allowable Subject Matter

4. Claims 6, 7, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art Cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee et al (U S 6,400,831 B2) disclose semantic video object segmentation and tracking.

Dorricott et al (U S 5,526,053) disclose motion compensated video signal processing.

Gupta et al (U S 5,852,475) disclose transform artifact reduction processs.

Edwards et al (U S 6,545,706 B1) discloses system method and article of manufacture for tracking a head of a camera-generated image of a person.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246. The fax phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai
Patent Examiner
Group Art Unit 2625
April 2, 2004

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